

WHAT IS CLAIMED IS:

1. A scanning microscope comprising: an acoustooptical component that splits out illuminating light for illumination of a sample from the output light of at least one light source, and conveys detected light proceeding from the sample to a detector, a control circuit for controlling the power of the illuminating light and at least one monitoring detector which is arranged in the beam path of the output light from which the illuminating light has been split out and which is the measuring element of the control circuit.
2. The scanning microscope as defined in Claim 1, wherein the acoustooptical component spreads off the output light in spatially spectral fashion.
3. The scanning microscope as defined in Claim 2, wherein one monitoring detector is provided for each of the different wavelength regions or different wavelengths of the spatially spectrally spread-off output light.
4. The scanning microscope as defined in Claim 1, further comprising a processing module that controls the acoustooptical component in open- or closed-loop fashion as a function of at least one light power level measured with the monitoring detector.
5. The scanning microscope as defined in Claim 1, wherein the acoustooptical component is an acoustooptical tunable filter (AOTF) or an acoustooptical modulator (AOM).
6. The scanning microscope as defined in Claim 1, further comprising a processing module that, as a function of at least one light power level measured with the monitoring detector, controls in open- or closed-loop fashion a controllable optical element arranged between the light source and

the acoustooptical component in the beam path of the output light of the light source.

7. The scanning microscope as defined in Claim 6, wherein the controllable optical element is a polarization rotator and/or an LCD element and/or an acoustooptical tunable filter (AOTF) and/or an acoustooptical modulator (AOM) and/or an electrooptical modulator (EOM).
8. A scanning microscope comprising: an acoustooptical component that splits out illuminating light for illumination of a sample from the output light of at least one light source, a control circuit for controlling the power of the illuminating light, at least one monitoring detector which is arranged in the beam path of the output light from which the illuminating light has been split out and which is the measuring element of the control circuit and a processing module that controls the acoustooptical component in open- or closed-loop fashion as a function of at least one light power level measured with the monitoring detector.